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Patent
Attorney Docket No. PD-200316
Customer No. 29190

AMENDMENT AND PRESENTATION OF CLAIMS

Please replace all prior claims in the present application with the following claims:

1-21. (Canceled).

22. (Previously Presented) A method of acquiring a communication signal, the communication signal comprising a plurality of frames, each frame comprising a plurality of time slots, at least one time slot in each frame having synchronization data with a unique word signal contained therein, the method comprising:

(a) setting the gain of an automatic gain control circuit based on the maximum power measured in continuous time intervals being less than the duration of one time slot of each frame;

(b) correlating at least one frame with a locally generated unique word signal at at least one of a plurality of possible frequencies;

(c) storing a correlation value for each of said possible frequencies;

(d) setting a numerically controlled oscillator (NCO) frequency based on a desired correlation value of said possible frequencies;

(e) repeating steps (a)-(d) while the correlation value is below a frequency acquisition threshold, and when said correlation value is at least equal to said frequency acquisition threshold, performing the steps of:

(f) determining an arrival time of the unique word signal in a first frame;

(g) estimating an estimated arrival time of the unique word signal in a second frame based on the arrival time of the unique word signal in said first frame;

(h) determining the actual arrival time of the unique word signal in said second frame;

(i) calculating a difference between the estimated arrival time and the actual arrival time;

(j) adjusting a voltage controlled oscillator (VCO) frequency based on said difference;

(k) repeating steps (f)-(j) while said difference is not below a timing acquisition threshold to determine acquisition of said communication signal.

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23. (Original) The method of claim 22, wherein said step of setting the gain measures time intervals that are no more than half of the duration of one time slot.

24. (Original) The method of claim 22 wherein said correlating step is performed at each of said plurality of possible frequencies.

25. (Original) The method of claim 22 wherein said step of setting the NCO frequency sets the NCO frequency based on the maximum correlation value of said possible frequencies.

26-47. (Canceled).

48. (Previously Presented) A system for acquiring a communication signal, the communication signal comprising a plurality of frames, each frame comprising a plurality of time slots, at least one time slot in each frame having synchronization data with a unique word signal contained therein, the system comprising:

a correlator adapted to correlate at least one frame of said communication signal with a locally generated unique word signal at at least one of a plurality of possible frequencies, to store a correlation value for each of said possible frequencies, and to set a numerically controlled oscillator (NCO) frequency based on a desired correlation value of said possible frequencies;

a gain setting device adapted to set the gain of an automatic gain control circuit (AGC) based on the maximum power measured in each frame in predetermined time intervals each being less than the duration of one time slot, to apply said gain to said communication signal, and to continue setting the gain of the AGC until said correlator generates a correlation value above a frequency acquisition threshold;

a voltage controlled oscillator (VCO) frequency offset reducer adapted to:

determine an arrival time of the unique word signal in a first frame;

estimate an estimated arrival time of the unique word signal in a second frame based on the arrival time of the unique word signal in said first frame;

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determine the actual arrival time of the unique word signal in said second frame;
calculate a difference between the estimated arrival time and the actual arrival time;
adjust a VCO frequency based on said difference, and
repeat functions (a)-(e) on subsequent frames if said difference is not below a timing acquisition threshold value; and
a mode selection circuit for causing the system to enter a tracking mode if said difference is below said timing acquisition threshold value.

49. (Original) The system of claim 48, wherein said predetermined time interval is no more than half of the duration of one time slot.

50. (Original) The system of claim 48, wherein said correlator correlates at least one frame with a locally generated unique word signal at each of said plurality of possible frequencies.

51. (Original) The system of claim 48, wherein the correlator sets the NCO frequency based on the maximum correlation value of said possible frequencies.

52-55. (Canceled).

56. (Previously Presented) A method of providing synchronization based on a communication signal including a plurality of frames, each frame including one or more time slots, the method comprising:

setting the gain of an automatic gain control circuit based on the maximum power measured in continuous time intervals being less than the duration of a time slot of each frame of the communication signal;

correlating at least one frame with a locally generated unique word signal at at least one of a plurality of frequencies;

storing a correlation value for each of the frequencies;

setting an oscillator frequency based on a correlation value of the frequencies;

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determining whether the correlation value is below a frequency acquisition threshold;
determining an arrival time of a unique word signal in a first frame;
determining an estimated arrival time of the unique word signal in a second frame based on the arrival time of the unique word signal in the first frame;
determining a difference between the estimated arrival time and an actual arrival time;
adjusting a voltage controlled oscillator (VCO) frequency based on the difference;
comparing the difference with a timing acquisition threshold; and
determining acquisition of the communication signal based on the comparison.

57. (Previously Presented) An apparatus for providing synchronization based on a communication signal including a plurality of frames, each frame including one or more time slots, the apparatus comprising:

means for setting the gain of an automatic gain control circuit based on the maximum power measured in continuous time intervals being less than the duration of a time slot of each frame of the communication signal;

means for correlating at least one frame with a locally generated unique word signal at at least one of a plurality of frequencies;

means for storing a correlation value for each of the frequencies;

means for setting an oscillator frequency based on a correlation value of the frequencies;

means for determining whether the correlation value is below a frequency acquisition threshold;

means for determining an arrival time of a unique word signal in a first frame;

means for determining an estimated arrival time of the unique word signal in a second frame based on the arrival time of the unique word signal in the first frame;

means for determining a difference between the estimated arrival time and an actual arrival time;

means for adjusting a voltage controlled oscillator (VCO) frequency based on the difference;

means for comparing the difference with a timing acquisition threshold; and

means for determining acquisition of the communication signal based on the comparison.

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58. (Previously Presented) A system for acquiring a communication signal, the system comprising:

a correlator adapted to correlate one frame of the communication signal with a locally generated unique word signal at at least one of a plurality of possible frequencies, to store a correlation value for each of the frequencies, and to set an oscillator frequency based on a desired correlation value of the frequencies;

an automatic gain control circuit (AGC) configured to be set based on the maximum power measured in each frame in predetermined time intervals each being less than the duration of one time slot, wherein the gain is applied to the communication signal, and the gain of the AGC is repeatedly set until the correlator generates a correlation value above a frequency acquisition threshold;

a voltage controlled oscillator (VCO) frequency offset reducer adapted to adjust a VCO frequency based on a difference of an estimated arrival time of a unique word signal in a subsequent frame based on the arrival time of a unique word signal in a prior frame and an actual arrival time of the unique word signal in the subsequent frame, wherein the difference is repeatedly determined if the difference is not below a timing acquisition threshold value; and

a mode selection circuit for causing the system to enter a tracking mode if the difference is below the timing acquisition threshold value.